



## Lifestyle screening: development of an acceptable multi-item general practice tool

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### Abstract

**Aims** To develop a short screening tool for lifestyle and mental-health risk factors that adults can self-administer, and to determine acceptability and feasibility of use of this tool in primary care settings.

**Methods** The multi-item tool was designed to screen patients in rural and urban New Zealand general practices for smoking, alcohol and drug misuse, problem gambling, depression, anxiety, abuse, anger, sedentary lifestyle, and weight issues. Patients were offered help for identified risk factors. Fifty consecutive adult patients per practice (n=2,543) were recruited to participate from 20 randomly-selected urban general practitioners; 20 general practice nurses and 11 rural general practitioners.

**Results** Patients came from diverse ethnic, geographical, and socioeconomic backgrounds. The sample prevalence of positive responses identified ranged from 2.8% (gambling) to 42.7% (depression). The number of patients requesting immediate assistance with these responses (0.5 to 13.5%) did not overwhelm clinicians. The tool was well accepted by patients, with few objections to specific questions (0.1–0.8%). Most practitioners stated they will use the screening tool once available.

**Conclusions** Screening for lifestyle and mental health risk factors is becoming increasingly important in primary health care. This screening tool was acceptable to patients and was not considered overly burdensome by practitioners.

Increasing emphasis on preventive practice in primary health care settings necessitates screening for lifestyle and mental health risk factors. Screening tools are available for specific factors—for example, the Alcohol Use Disorders Identification Test (AUDIT);<sup>1</sup> the South Oaks Gambling Screen instrument for the identification of problem gambling;<sup>2</sup> the Beck Depression Inventory;<sup>3</sup> the Partner Violence Screen;<sup>4</sup> and the Conflict Tactic Scale (measuring use of reasoning, verbal aggression and physical violence in resolving conflict).<sup>5</sup>

Opportunistic screening is likely to have limited effect compared with routine screening by invitation.<sup>6</sup> However, given consultation time restraints, compliance with routine screening regimes can be low for both patients and practitioners.<sup>7,8</sup>

Furthermore, some patients are embarrassed or object to being asked sensitive questions about their lives. For example, several studies examining women's acceptability of domestic violence screening show huge variability in the percentage of women who object—ranging from 15 to 57%.<sup>4,9–19</sup> Similarly, most studies indicate that the majority of general practitioners and other primary healthcare workers are not in favour of screening for partner abuse.<sup>12,20–23</sup> We hoped that screening all patients

for several potentially sensitive issues would not offend patients, yet allow collection of important information.

Cigarette smoking, alcohol and other drug misuse meet World Health Organization (WHO) criteria for primary care screening, as do the mental health conditions of depression and anxiety.<sup>24</sup> Recent court rulings in New Zealand (highlighting the need for employers to attend to the psychological safety of the workplace and the role of GPs in assessing the 'stress' levels of their patients) are likely to increase.

Problem gambling is an identified increasing social problem, which can impact negatively on health. The development of screening tools and effective interventions supports primary care screening.

Interpersonal violence (including spousal abuse) is a growing concern. Partner abuse currently does not meet the internationally-recognised criteria for screening,<sup>25</sup> particularly regarding its unacceptability to many women patients;<sup>26</sup> however, medical organisations (in New Zealand and worldwide) advocate routine screening for it.<sup>27</sup> By embedding a generic question about violence and threats, and offering patients opportunity to address their own issues with anger management, it was hoped to increase the acceptability of screening for these issues.

Physical inactivity has been associated with an increase in risk of several disease states, as well as lower quality of life compared with an 'active' lifestyle. Interventions aimed at improving the physical activity of sedentary patients can help to reduce cardiovascular disease, diabetes, obesity, osteoporosis, and symptoms of depression as well as improve quality of life.<sup>28</sup> Given the high health burden due to physical inactivity, and it being an area of significant health gain potential, screening and intervention should be effective.<sup>28</sup> Similarly, obesity poses a health burden at all ages, being associated with a number of diseases caused by metabolic complications and/or the excess weight itself, and there is justification in screening for eating disorders and obesity.<sup>29</sup>

The aims of this study were to develop a short one-page screening tool for lifestyle and mental-health risk factors that adults can self-administer, and to determine the acceptability and feasibility of use of this tool in primary care settings.

## Methods

**Background**—The tool was designed by the lead author (Felicity Goodyear-Smith) in collaboration with a team that included general practitioners, university researchers, a psychologist, and a community-based brief-intervention educator of primary healthcare providers. A literature search of screening tools for the areas of interest was conducted. Where possible, existing short screening tools (for example, the two-question depression screen<sup>30</sup> and the question assessing sedentary behaviour<sup>28</sup>) or key questions from longer tools (for example, the AUDIT<sup>31</sup>) were incorporated into the screening tool. Most items have been previously validated independently in primary care settings.

The tool was assessed by primary healthcare providers in three settings. General practitioners in Auckland City, and practice nurses in urban and rural centres in the Otago region (of the South Island), were randomly selected using a computer-generated random number table. To include more rural patients, all 13 rural general practitioners in the Hawke's Bay region (of the North Island) were invited to participate.

Fifty consecutive adult patients were recruited per practitioner. All consecutive patients aged 16 years and over attending the practice (including those attending as caregiver of another patient) were invited

to complete the lifestyle assessment screening tool and evaluation sheet. Exclusion criteria were unable to understand English or mental impairment that precluded meaningful participation.

Lifestyle screening forms were self-administered by patients in the waiting room, or administered by a practice nurse in a consulting room, prior to the patient's consultation. Where the screening tool detected a risk factor that the patient wanted addressed, general practitioners could either deal with the problem at the time of the consultation or schedule a later appointment. To determine acceptability and feasibility of use of the tool, all patients and practitioners also completed feedback forms, which recorded objections to any of the screened topics and positive and negative responses to the tool.

**Analysis**—Data analysis, using descriptive statistics and non-parametric binomial (Chi-squared tests) was conducted using the SPSS-10.0 statistical package. Data included demographic information; positive responses to each screening question; number of patients requesting assistance from their doctor or nurse concerning risk factors; patients' objections to questions; and estimation of patient and practitioner satisfaction with the resource.

## Results

A total of 2,543 consecutive patients (1000 in Auckland; 1000 in Otago, and 543 in Hawke's Bay), 20 urban doctors, 20 practice nurses, and 11 rural doctors participated in the study. Three general practitioners and two nurses declined participation, giving a 91% practitioner participation rate. In Auckland (where patients were recruited by a research assistant), 23 patients actively declined to participate (97.75% response rate). In the other regions, the refusal rate was not recorded, but it is unlikely to differ significantly from the Auckland rate.

Approximately two-thirds of the patients were female in all three settings. Their ethnicity varied markedly. In Otago, 93% were New Zealand European, compared to 68% in Auckland, and 62% in Hawke's Bay. The Auckland sample was ethnically diverse including 7% indigenous Maori and 15% Pacific people, whereas the non-European population in the Hawke's Bay sample were almost exclusively Maori (33%). Patients' age ranged from 16 to 91 years, with an average age of 46 (Auckland and Hawke's Bay) and 49 (Otago).

Thirty-four percent (182/543) of Hawke's Bay patients admitted to being cigarette smokers, compared with 22% (221/1000) of Auckland patients ( $p=0.0002$ ). Otago patients were similar to Auckland (198/994, 20%). Of those patients who smoked, 16% (86/548) in Hawke's Bay smoked over 10 cigarettes per day compared with 9% (90/999) in Auckland and 9.75% (97/999) in Otago.

Fewer Auckland (701/999; 70%) than Hawke's Bay (450/538; 83.6%) and Otago (834/994; 83.9%) patients used alcohol, but an equal percentage (12%) drank four or more times a week in each setting.

The numbers of those patients who gave positive responses to screening questions; who wanted assistance with specific problems, and who objected to being asked specific questions are presented in Tables 1, 2, and 3 respectively.

The prevalence of identified risk factors ranged from 43% (for depression) and 40% (for anxiety) down to 11% for concerns about drinking and 3% for gambling and other drug use. Three times as many (15%) patients admitted to trouble with anger control than those who admitted trouble with being abused (5%).

Few patients with positive responses requested help for the identified problem; only 15% for depression and anxiety and 8.6% for smoking—down to 3.5% for anger, 1.4% for alcohol, 2.2% for abuse, 0.8 for drug misuse, and only 0.5% for gambling.

**Table 1. Positive responses to screening questions**

(This is effectively the questionnaire, excluding questions on quantity/frequency of smoking and drinking (reported in the text). Some missing data in Otago and Hawke's Bay samples because there was no on-site research assistant at these locations.)

Screening questions	Auckland N (%)	Otago N (%)	Hawke's Bay N (%)	Total N (%)
Do you ever feel the need to cut down on your smoking?	82/500 (16.4)	168/1000 (16.8)	161/536 (30)	441/2036 (20.2)
Do you ever feel the need to cut down on your drinking?	123/1000 (12.3)	106/1000 (10.6)	41/506 (8.1)	270/2506 (10.8)
Do you ever feel the need to cut down on your other drug use?	12/1000 (1.2)	39/1000 (3.9)	21/536 (3.9)	72/2536 (2.8)
Have you sometimes felt unhappy or worried after a session of gambling?	24/1000 (2.4)	37/1000 (3.7)	19/519 (3.7)	80/2519 (3.2)
During the past month have you often been bothered by feeling down, depressed or hopeless?	436/1000 (43.6)	446/992 (45)	198/536 (36.9)	1080/2528 (42.7)
During the past month have you often been bothered by having little interest or pleasure in doing things?	326/1000 (32.6)	350/978 (35.8)	128/529 (24.2)	804/2507 (32)
Have you been worrying a lot about everyday problems?	441/1000 (44.1)	414/965 (42.9)	143/520 (27.5)	998/2485 (40.2)
Is there anyone in your life whom you are afraid of, who hurts you in any way or prevents you doing what you want?	57/1000 (5.7)	43/979 (4.4)	30/530 (5.6)	130/2509 (5.2)
Is controlling your anger sometimes a problem for you?	160/1000 (16)	147/975 (15.1)	79/532 (14.8)	386/2507 (15.4)
As a rule, do you ( <i>not</i> )* do at least 30 minutes of moderate or vigorous exercise (such as walking or a sport) on 5 or more days of the week?	449/1000 (44.9)	395/981 (40.3)	243/534 (45.5)	1087/2515 (43.2)
Are you ( <i>un</i> )*happy with your current weight?	388/1000 (38.8)	421/970 (43.4)	218/531 (45.9)	1027/2501 (41.1)

\*The actual question asked was asked in the positive, but the inverse is reported to facilitate clarity of comparison with other risk factors.

**Table 2. Responses requesting assistance with identified risk factor**

Risk factor	Patient wanting help from doctor or nurse with specific problems*					
	No		Yes, but not today		Yes, today	
	N	%*	N	% †	N	% †
Smoking	1946 / 2133	91.2	119 / 2133	5.6	68 / 2133	3.2
Alcohol	2114 / 2143	98.6	19 / 2143	0.9	10 / 2143	0.5
Other drugs	2055 / 2072	99.2	9 / 2072	0.4	10 / 2072	0.4
Gambling	2050 / 2061	99.5	6 / 2061	0.3	5 / 2061	0.2
Depression	1857 / 2127	87.3	117 / 2127	5.5	153 / 2127	7.2
Anxiety	1851 / 2139	86.5	139 / 2139	6.5	149 / 213	7.0
Abuse	1962 / 2007	97.8	22 / 2007	1.1	24 / 2007	1.1
Anger	1935 / 2005	96.5	44 / 2005	2.2	26 / 2005	1.3
Exercise	1992 / 2007	95.8	57 / 2007	2.8	28 / 2007	1.4
Weight	1838 / 2016	91.2	105 / 2016	5.2	73 / 2016	3.6

\*Because results were very similar across all three regions (Auckland, Otago, Hawke's Bay), only findings for total number of patients are presented for the sake of clarity; †Percent excluding missing data for factor in question.

**Table 3. Questions patients objected to being asked**

	Auckland*	Otago†	Hawkes Bay‡	Total patients
	N (%)	N (%)	N (%)	N (%)
Objected to any question	8 (0.8)	24 (2.4)	24 (4.4)	56 (2.2)
Smoking	1 (0.1)	3 (0.3)	5 (0.9)	9 (0.3)
Alcohol	1 (0.1)	4 (0.4)	8 (1.5)	13 (0.5)
Other drugs	4 (0.4)	5 (0.5)	13 (2.4)	22 (0.8)
Gambling	0 (0)	5 (0.5)	10 (2.2)	15 (0.6)
Depression	0 (0)	1 (0.1)	7 (1.3)	8 (0.3)
Anxiety	1 (0.1)	4 (0.4)	5 (0.9)	10 (0.4)
Abuse	0 (0)	4 (0.4)	6 (1.1)	10 (0.4)
Anger	0 (0)	3 (0.3)	4 (0.7)	7 (0.3)
Exercise	0 (0)	0 (0)	3 (0.6)	3 (0.1)
Weight	1 (0.1)	2 (0.2)	6 (1.3)	9 (0.3)

\*Auckland: No patient objected to more than one question. †Otago: 9 patients objected to more than 1 question. ‡Hawke's Bay: 3 patients objected to every question; all objectors objected to more than one question.

There was minimal (<1%) objection to the screening questions, ranging from 0.8% objecting to being asked about their drug use down to 0.1% objecting to the question on physical activity.

Feedback from both patients and practitioners on the tool was overwhelmingly positive. Most patients liked using it; they found it clear, short, quick and easy to complete. Some commented that it was 'non-threatening'; made them aware of lifestyle practices that might impact on their health; and gave them options regarding seeking help. Ninety-three (3.6%) patients recorded negative comments—because either they thought questions were too personal or too vague, or they were concerned that issues such as diet, employment difficulties, or allergies were omitted.

The tool was also well-received by practitioners. Overall, doctors were more positive than nurses, with all but three (one urban, two rural) doctors saying they would use it in their practice. Half of the practitioners would like it in paper form and the other half would like it in either electronic or dual formats. Many would use the tool with all new patients, some would screen all patients in the waiting room for one month each year, while some would use the tool opportunistically. Seventy-five percent of the nurses also said they would use the tool. The five nurses not intending to use the tool filled in the form on behalf of their patients, rather than allowing the patients to self-complete.

## Conclusion

This is the first multi-item lifestyle and mental-health screening questionnaire in the literature. It was very acceptable to patients in both urban and rural settings. For example, only 0.4% of patients objected to the question on abuse, and this included three patients who objected to every question. This compares very favourably with other screening studies, where 15 to 57% of female patients objected to being asked about abuse.<sup>4,9-19</sup>

These findings indicate that more than 99% of all adult patients in a New Zealand general practice setting will complete a self-administered generic questionnaire requesting sensitive information on lifestyle and mental-health issues without patient objection. Less than 1% of patients objected to being asked any of the questions, with the greatest number of objections to the question on other drugs such as cannabis use (0.8%).

Given the illegal nature of this behaviour, this is not surprising, however. This raises the issue of patient honesty with respect to self-reporting of such behaviours. Under-reporting may be an issue, given that responses were not anonymous to patients' practitioners. However some studies comparing self-reporting of alcohol and drug use with blood alcohol measures, and blood or urine testing for other drugs, have found self-reporting consistent with the biological markers, although these studies were not necessarily conducted within the primary health care setting.<sup>32-34</sup>

Generally, findings were similar between urban and rural populations, and between doctor and practice nurse patients. The tool was acceptable to most general practitioners and nurses, who found it simple to use. The small number of practice nurses who were less enthusiastic were those who interviewed the patients to collect feedback information about screening and commented that this was time-consuming. However, as a self-administered questionnaire without the research feedback component, this issue would not arise.

The questions on depression and anxiety yielded high response rates, some of whom requested assistance. It is not known whether these were newly detected problems or whether patients' consultations were for ongoing care of these pre-existing conditions. A study is currently underway to determine whether those patients requesting help are those with moderate or severe depression in greatest need of intervention.

Initial fears that doctors would be inundated with requests for help with newly identified lifestyle problems, in addition to the scheduled consultation, were not realised. Having identified a problem, patients had the option to state that they did not wish to deal with it today. For those patients that did identify a problem (for which they wanted help today), the doctor had the option of either dealing with it if time allowed, or scheduling another appointment for it.

To our knowledge this is an innovative approach not utilised in other tools, and may help gauge patients' willingness to address the issue.<sup>35</sup> The highlighting of a lifestyle risk factor (such as smoking in a patient who does not want help) still allows for a brief intervention—ie, acknowledging that the patient smokes and advising that help is available should it be required in the future.

A strength of this study was the large sample size conducted with consecutive adult patients with concurrent assessment of the acceptability of the tool. We chose to test the tool in three different settings to assess its usefulness across a broad range of patient ages, ethnicity, and sociodemographic circumstances and with both rural and urban general practitioners and practice nurses. The items chosen are predominantly those expected to be screened for in general practice (such as smoking, alcohol use, depression, physical activity) plus several for which there are significant associated health sequelae (for example gambling and exposure to violence).

There is growing demand for these issues to be addressed within primary health care settings.<sup>27,36,37</sup> However a weakness in this tool is that; while there is a general expectation and sometimes ministerial directive that GPs identify and manage mental health disorders such as anxiety, and social problems such as gambling and domestic violence; some of these issues currently do not meet international guidelines for screening.<sup>25</sup>

The tool consists of a number of brief screens, some of which have been validated under different conditions—for example, the two-question depression screen.<sup>30</sup> While several mental health and lifestyle screening tools have been developed for general practice, either for single or multiple issues (for example, conjoint screening for alcohol and other drugs<sup>38</sup>), there is no alternative tool offering brief screening for a broad range of mental health and lifestyle behaviours relevant to general practice. Thus, a limitation of the findings are that they are derived from the development of a multi-item tool and assessment of the feasibility and acceptability of its use. As the composite tool is not validated, care needs to be taken in interpreting the findings of prevalence of various risk factors and conditions.

The entire screening questionnaire will undergo a validation exercise against appropriate ‘gold standards’ for each condition. Once validated for use in New Zealand primary health care, paper versions will be made available, and electronic versions integrated into patient management software. Ideally, a positive response will lead seamlessly to a more comprehensive screening or diagnostic tool—for example, access to the full version of the AUDIT (a validated 10-question screening tool for problematic drinking).

Several of our screened conditions do not yet meet WHO criteria for screening (for example, there are no randomised controlled trials of effective treatment for gambling). Future research may involve assessing the treatment for some of these conditions. We had concerns about the utility of our weight questions and our amended tool will use the weight screening question from the Primary Care Evaluation of Mental Disorders (PRIME-MD)<sup>39</sup>—a screening instrument developed using diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV). The full PRIME-MD has limited clinical usefulness due to its lengthy administration time.<sup>40</sup>

In summary, general practice is highly accessible to patients requiring help with problem behaviours, and patients expect to receive preventive lifestyle advice from their general practitioner—but, given consultation time restraints, compliance with routine screening regimes can be low for both patients and practitioners.

This is the first brief multi-issue self-administered screening tool for lifestyle risk factors and mental health issues for use in primary healthcare, and it proved very acceptable to large sample of consecutive adult patients. Furthermore, it was well-received by general practitioners and practice nurses, who were not inundated with requests for help with lifestyle problems in addition to the scheduled consultation issues. Asking if assistance is required, either now or later, is an innovation that may gauge patients’ readiness to change their behaviour. This tool is promising and goes some way to meet demands for screening lifestyle and mental health issues in primary healthcare.

A study validating the tool against a composite 'gold standard' in the context of a randomised trial (with 6-month outcome and process evaluations) is currently underway. Once the tool has been validated, it will be available for use by general practitioners, practice nurses, and other clinical primary healthcare workers nationwide.

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